

REMARKS

Claims 1-7 and 9 are pending.

Initially, Applicant thanks the Examiner for indicating that Claim 2 contains allowable subject matter.

Referring to page 2 of the Office Action, Claims 1, 3-7 and 9 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 3,717,129 ("Fox").

Applicant traverses and respectfully requests the Examiner to reconsider in view of the following remarks.

Fox discloses an endothermic steam reforming reaction that is carried out in the catalytic first chamber 12 of a fuel regenerator tube 10. The chamber 12 of the fuel regenerator tube 10 is fed with a flow of liquid hydrocarbons through conduit 25 and a flow of water through conduit 27. The heat required for carrying out the reforming reaction in the catalytic chamber 12 is obtained through indirect heat exchange with a heating fluid.

Such a heating fluid consists of a flow of exhaust gases coming from the combustion chamber of an engine 6 and fed to the second chamber 14 of the fuel regenerator tube 10 through conduit 18. The heating fluid (exhaust gases) is obtained in the combustion chamber of engine 6 burning liquid hydrocarbons and reformed fuel in the presence of air.

In the process disclosed and taught by Fox, no water is fed to the exhaust gases (heating fluid) and/or to the combustion chamber of the engine 6.

Therefore, at least the features recited in the last paragraph of present Claim 1, i.e., "feeding a flow comprising water to said high temperature fluid and/or to said combustor," are clearly missing from the process disclosed by Fox.

Moreover, Applicant respectfully submits that the Examiner has inappropriately confused the heating fluid to be used as an indirect heat source for carrying out endothermic reactions (that is, the exhaust gases leaving the combustion chamber of the engine 6 and fed through conduit 18 to the fuel regenerator tube 10) with the products resulting from said endothermic reactions (that is, the flow of reformed fuel leaving the regenerator tube through conduit 22). In other words, according to the analysis made by the Examiner, the process disclosed by Fox is in clear contrast with the process recited in the preamble of present Claim 1, wherein the heating fluid is the heat source for the endothermic reactions and does not comprise the products resulting from the endothermic reactions.

A person skilled in the art would readily appreciate that the above distinguishing features have the unexpected and advantageous effect of eliminating the risk of metal dusting in the reforming apparatus to which the high temperature heating fluid is fed (i.e., the apparatus where the endothermic reforming reactions take place). In fact, as a result of the presence of water in the heating fluid, it is possible to obtain an oxidant atmosphere in that portion of the apparatus licked by the heating fluid, which prevents the metal dusting from taking place. Accordingly, higher reliability of the reforming apparatus and lower maintenance costs are obtained.

Thus, the present application provides a process for obtaining a high temperature heating fluid that allows an improvement in performance in terms of reliability and maintenance costs of the reforming apparatus in which such a high temperature fluid is used as heat source to support the reforming reactions. See, e.g., page 6, line 22 to page 8, line 15 of the present application.

Moreover, the presently claimed process allows for a reduction in the amount of oxygen required for the hydrocarbon combustion in the combustor. This means that the flow rate of the oxygen containing flow fed to the combustor is much lower than in conventional prior art

processes, with ensuing high savings in terms of energy consumption due to the less oxygen to be compressed. See, e.g., page 8, line 22 to page 9, line 3 of the present application.

A more efficient plant with reduced fuel and energy consumption and requiring smaller size of rotating equipment (such as the compressors) is therefore obtained according to the process recited by Claim 1.

In this respect, Fox fails to disclose or suggest both the technical problem mentioned above and the presently claimed solution. Moreover, Fox is related to a totally different technical field (reduction of exhaust pollutants in engines) with respect to the technical field of the present invention (hydrocarbons (secondary) reforming for obtaining chemical reactants).

Therefore, a person skilled in the art who is faced with the problem of metal dusting in reforming apparatuses and would like to improve reliability and reduce maintenance costs, as well as the efficiency and energy consumption of the related plants, would have never considered Fox as a relevant prior art, *at least* because Fox is concerned with a different technical field, aims to solve a different technical problem and reasonably provides no suggestion or teaching of how to solve the problem of the present application.

Accordingly, any assertion that it would have been obvious to a person skilled in art in possession of the disclosure of Fox to arrive at the presently claimed process is unreasonable and can only be regarded as impermissible hindsight analysis.

In view of the above, reconsideration and withdrawal of the Section 103 rejection of Claims 1, 3-7 and 9 based on Fox are respectfully requested.

For the reasons set forth above, Applicant respectfully submits that Claim 2 is allowable in its present form.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.


Respectfully submitted,

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

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CUSTOMER NUMBER



Michael G. Raucci
Registration No. 61,444

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